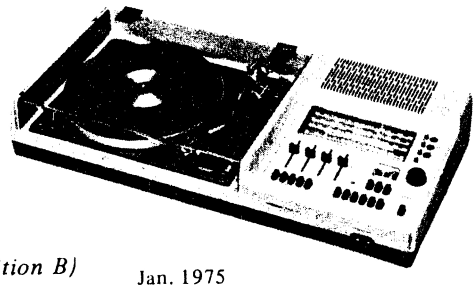
Teleton

SERVICE MANUAL

Hi-Fi LW/MW/SW/FM Stereo Receiver with Disk Player

MODEL CS—400



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TELETON Electro GmbH. + Co. KG
4000 Düsseldorf-Rath Oberhausener Str. 17
Tel. (0211) 65 30 81 TX 858 6768

TELETON Electro (UK) Co., Ltd.
Teleton House, Waterhouse Lane,
Chelmsford/Essex
Tel. Chelmsford 62 442 TX 93 338

Technical Service Organization
Waterhouse Lane, Chelmsford, Essex.
Tel. 0245-54621 TX 99338

TELETON N. V.
2200 Borgerhout Belgium
Prins-Leopold-Straat 28
Tel. 03/361045 TX 32508
03/357670

TELETON NEDERLAND
Nieuwe Herengracht 119 Amsterdam
Tel. 24 83 81

TELETON Electro (France) S.a.r.l.
21 rue Paul Lafargue 94 Kremlin-Bicêtre
Tel. 726 4091

TRANSACO AG
Kanzleistrasse 126 8004 Zürich
Tel. 39 45 60/23 50 40 TX 52 362

For disassembly please see exploded view.

ADJUSTMENT INSTRUCTIONS

1. Adjustment of Main Amp.

When transistors Q311, 312, 313, 314, 315, 316, 317, 318 are exchanged, the following adjustment is necessary:

1-1 Measuring Equipment
- (a) DC Current Meter (100mA Maximum)
- (b) Oscilloscope
- (c) Dummy load 30W

1-2 Condition of the Set
- (a) Treble . . . . . Middle Position
- (b) Bass . . . . . Middle Position
- (c) Volume . . . . . Minimum
- (d) Balance . . . . . Middle Position
- (e) Muting, AFC, Loudness, High Filter, OFF Position.
- (f) Mode Switch . . . . . Stereo
- (g) Function Switch . . . . . AUX
- (h) Speaker Switch . . . . . A or B
- (i) Tape Monitor Switch . . . ON

1-3 Adjustment
- (a) Set VR301.VR302, VR303, VR304 to meckanical center Position (AA-400 P.C. board)
- (b) Connect the DC Current Meter to Fuse Terminal (AA-400 P.C. Board L or R)
  - ⊕ : Terminal No. 21
  - ⊖ : Transistor, collector side (L: Q315 R: Q316)
- (c) Adjust VR303(L) or VR304(R) to obtain 17mA ± 3mA.
- (d) Repeat procedure (a) ~ (c) several times.
- (e) Add the signal of 1000Hz, 600mV ~1V tp tape input, and adjust Volume Control for Clipping level of speaker (or dummy) output.
  (Tape Monitor Switch : ON Mode Switch : MONO)
- (f) Adjust VR301(L) & VR302(R) to obtain the symmetrical sin-wave.
- (g) Repeat procedure (e) ~ (f) several times.

2. AM IF Adjustment

2-1 Measuring Equipments
- (a) AM Standard Signal Generator
- (b) Output Meter (V.T.V.M)
- (c) Oscilloscope
- (d) Dummy Load 8Ω 30W

2-2 Preparation of Adjustment
- (a) Volume: Max., Mode: MW, Others: same as procedure 1-2
- (b) Measuring Connection is as follows:

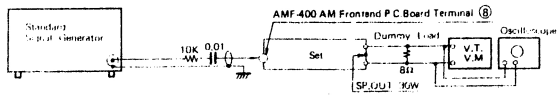
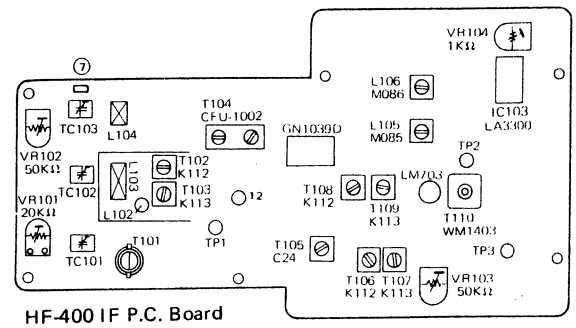


Figure 1



HF-400 IF P.C. Board

Figure 2

2-3 Adjustment
- (a) Set S.G. to 460 KHz (Mod. 400 Hz 30%) 80 dB, and adjust IF cores of T104 and T105 for maximum output reading. (See Figure 2)
  Adjust the Attenuator of S.G. according to increase the output, and put the output reading to 500 mW (2V).
- (b) Repeat procedure (a) several times.

3. AM Tracking Adjustment (Adjusting procedure for LW, MW, and SW) (See AMF-400 AM Frontend P. C. B.)

3-1 Measuring Equipments
- (a) AM Standard S.G. (including loop antenna)
- (b) Output Meter (V.T.V.M.)
- (c) Oscilloscope
- (d) Dummy Load 8Ω 30W

3-2 Preparation of Adjustment
- (a) Volume: Max., Mode: LW, Others: same as procedure 1-2
- (b) Measuring connection is as follows:

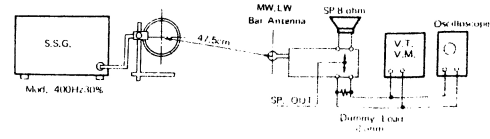


Figure 3

Figure 4

(c) TC201, TC202, TC203, TC204, TC205 and TC206 Position are as shown in Figure 4.

Note: All adjustments for max. Output.

3-3 LW Tracking Adjustment (Function Switch: LW)

3-3-1 Adjustment of Local Osc. circuit

Adjustment Step	1	2
Frequency (S.G.)	145 kHz	350 kHz
V.C. Position	Max. Capacitance	Min. Capacitance
Adjust Point	T201	TC201

Repeat Step 1 and 2 several times. When step 1 and 2 match, adjustment of the Local Osc. Circuit is finished.

3-3-2 Adjustment of Tuning Circuit

Adjustment Step	1	2
Frequency (S.G.)	160 kHz	320 kHz
V.C. Position	160 kHz Tuning Position	320 kHz Tuning Position
Adjust Position	T601 LW Tuning Coil (Bar Ant.)	TC205

Repeat step 1 and 2 several times. When step 1 and 2 match, adjustment of tuning circuit is finished. Fix the LW Tuning Coil with wax, and adjust finely the Local Osc. Circuit (because the coverage drag by the Tracking adjustment.)

3-4 MW Tracking Adjustment (Function Switch: MW)

3-4-1 Adjustment of Local Osc. Circuit

Adjustment Step	1	2
Frequency	505 KHz	1630 KHz
V.C. Position	Max. Capacitance	Min. Capacitance
Adjust Position	T202	TC202

3-4-2 Adjustment of Tuning Circuit

Adjustment Step	1	2
Frequency	600 KHz	1400 KHz
V.C. Position	600 KHz Tuning Position	1400 KHz Tuning Position
Adjust Position	T601 MW Tuning Coil (Bar Ant.)	TC206

3-5 SW Tracking Adjustment (Function Switch: SW)
S.S.G. Signal input: AM External Antenna (through IEC Dummy Antenna)

3-5-1 Adjustment of Local Osc. Circuit

Adjustment Step	1	2
Frequency (S.G.)	5.8 MHz	12.5 MHz
V.C. Position	Max. Capacitance	Min. Capacitance
Adjust Position	T203	TC203

3-5-2 Adjustment of Tuning Circuit

Adjustment Step	1	2
Frequency (S.G.)	7 MHz	11 MHz
V.C. Position	7 MHz Tuning Position	11 MHz Tuning Position
Adjust Position	T204	TC204

FM IF Adjustment (See Figure 2.)

4-1 Measuring Equipment
(a) 10.7 MHz Interscope (Sweep Generator and Scope)
(b) Detector Probe

4-2 Preparation of Adjustment
(a) Function Switch: FM (manual)
(b) FM AFC Switch, FM Muting Switch: OFF

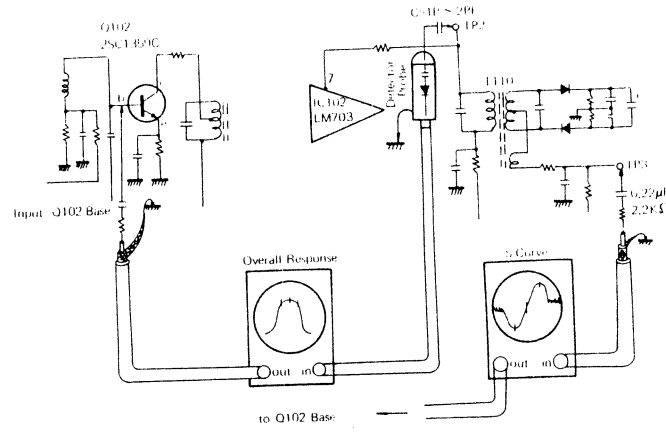


Figure 5

Note: 1. Keep output lead and input lead at a distance.
2. Ground of the output and input lead should be done near point of hot side.

4-3 Adjustment

Overall Response
(a) Draw the secondary core of T110 fully.
(b) Adjust T102, 103, 106, 107, 108, 109 and T110 to obtain the best overall response (Fig. 6-a).
(c) The input signal should be appeared small unless the waveform fade away by the noise.
(d) The waveform should not change by input level.

S Curve
(a) Adjust the secondary core of T110 to obtain the best S curve (Fig. 6-b).
(b) In above adjustment, when the best S curve does not obtain, adjust T102~T110 somewhat.
(c) When above (a) & (b) finished, observe the overall response. If the waveform drag, check the S curve again.

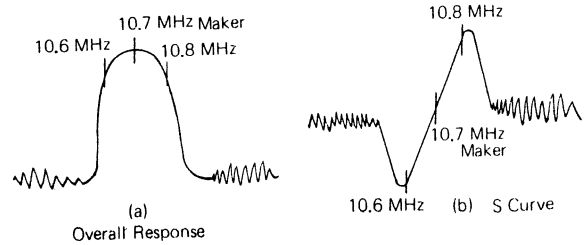


Figure 6

5. FM Tracking Adjustment (See Figure 2.)

5-1 Measuring Equipment
(a) FM Standard Signal Generator (include the pad)
(b) Output Meter (V.T.V.M.)
(c) Oscilloscope
(d) Distortion Meter
(e) Dummy Load 8Ω 30W

5-2 Preparation of Adjustment
(a) Volume ----- Max. Function Switch ---- FM
(b) Measuring connection is as follows.

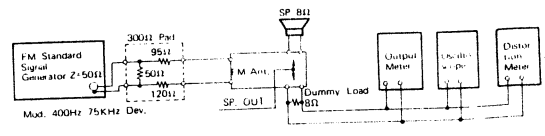


Figure 7

(c) TC101, TC102 and TC103 position are as follows.

Figure 8

(d) Set VR101, VR102 and VR103 to mechanical center position.
(e) Set Pre-Set Switch (Pre-Setter) to MANUAL.

5-3 Adjustment

5-3-1 Adjustment of Local Osc. Circuit

(a) Connect ⊕ terminal of Voltmeter to HF-400 IF P.C.Board terminal ⑦, and ⊖ terminal of Voltmeter to chassis.
(b) Set tuning to max. frequency and adjust VR102 for 9.5V Voltmeter scale.
(c) Set tuning to min. frequency and adjust VR101 for 2V Voltmeter scale.
(d) Repeat step (b) and (c) several times. When step (b) and (c) match, voltage adjustment is finished.
(e) Adjustment of tuning circuit

Adjustment Step	1	2
Frequency (S.G.)	87.5 MHz	104.5 MHz
Freq. Position	Min. frequency	Max. frequency
Adjust point	L104	TC103

Adjust for max. output.
Repeat step 1 and 2 several times. When step 1 and 2 match, adjustment of the Local Osc. Circuit is finished.

5-3-2 Adjustment of Tuning Circuit

Adjustment Procedure	1	2
Frequency (S.G.)	90 MHz	102 MHz
V.C. Position	90 MHz Tuning Position	102 MHz Tuning Position
Adjust Point	T101, L102	TC101, TC102

6. Adjustment of Meter (See Figure 2.)

6-1 Adjustment of Meter
Input 96 MHz (Mod. 400 Hz, 22.5 kHz Dev.) 100dB (Att. scale), and adjust VR103 for 4 Meter scale.

7. MPX Adjustment (See Figure 2.)

7-1 Measuring Equipment
(a) FM Standard Signal Generator (S.S.G.)
(b) FM Stereo Signal Generator (MPX S.G.)
(c) V.T.V.M.
(d) Oscilloscope

7-2 Preparation of Adjustment
(a) Volume ----- Adjust output of L ch. and R ch. for 500mW (2V).
(b) Bass, Treble Control ..... Center
(c) Loudness, Hi-Cut Filter, FM AFC, FM Muting Switch ---- OFF
(d) Mode Switch ----- Stereo
(e) Function Switch --- FM (manual)
(f) Set VR104 1KΩ Semi-fixed volume to center position.

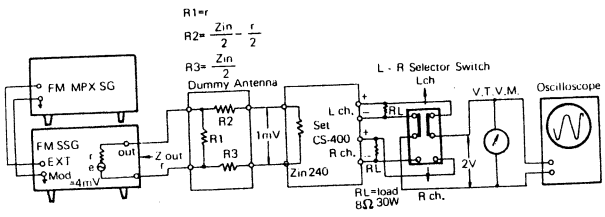


Figure 9

FM SSG Open Output Voltage	:	94 MHz 4mV
Modulation Frequency	:	400 Hz
Modulation Factor	:	L + R 90% (67.5 kHz Deviation)
		Pilot Signal 10% (7.5 kHz Deviation)
Input Voltage	:	1mV
Load	:	8Ω (30W)
Output	:	500mW (2V)

7-3 Adjustment
(a) Set SSG to 94 MHz (L + R) + Pilot to 1mV.
(b) Tune set to 94 MHz.
(c) Connect V.T.V.M. to terminal ① of IC103 through 47 kohm resistor.
(d) Adjust L105 (19 kHz, orange coil) for maximum voltage.

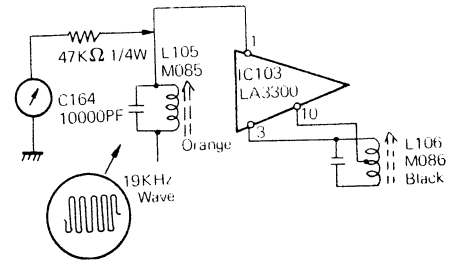
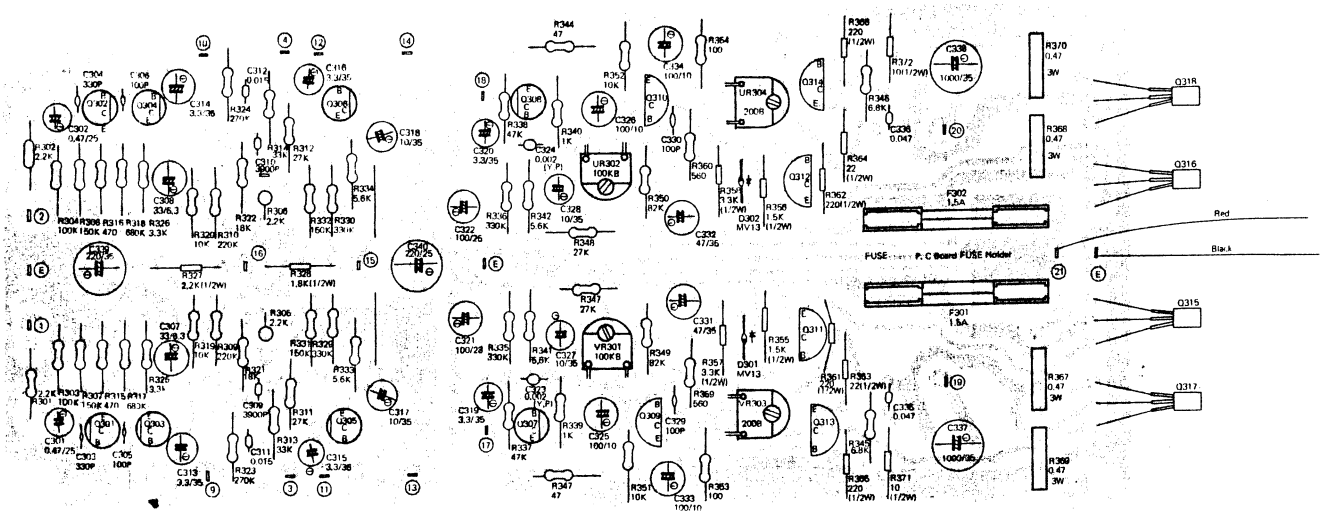
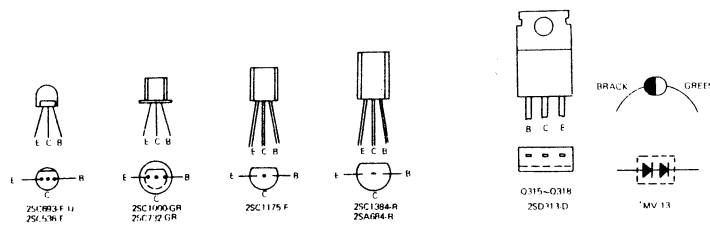


Figure 10

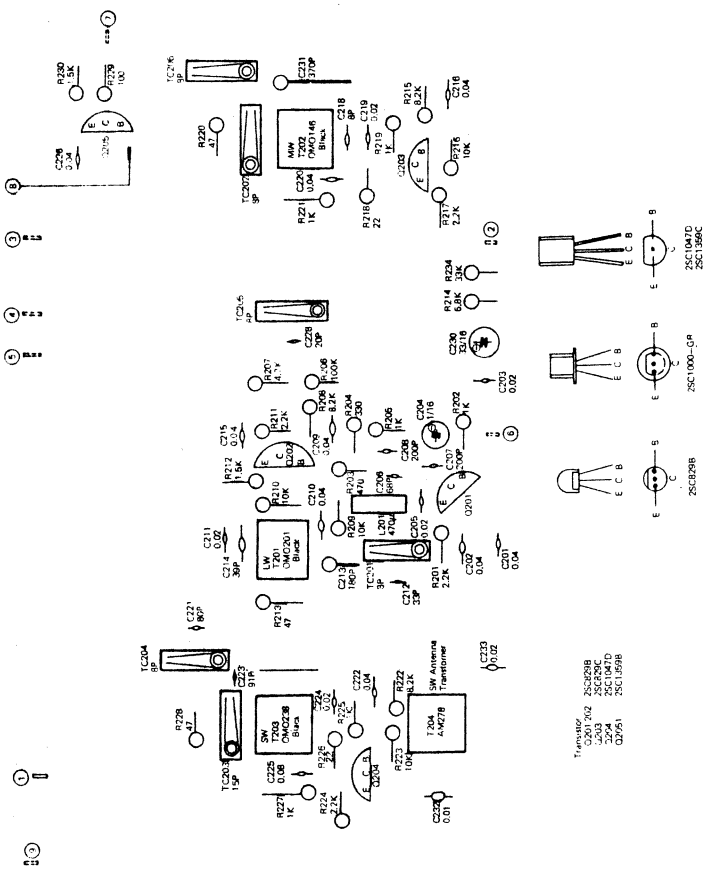
(e) FM MPX SG: (L −R) + Pilot
(f) Adjust L106 (38 kHz black coil) for max. output and min. distortion. Tuning Point appears two point, therefore adjust with first tuning Point. (If you adjust with second tuning Point, L & R appears opposite side).
(g) FM MPX SG: R + Pilot. Set output L.
(h) Adjust VR104 (1kΩ) for minimum output waveform.
(i) FM MPX SG: L + Pilot. Set output R.
(j) Adjust VR104 (1kΩ) for minimum output waveform.
(k) When the difference of L and R Separation is more than 6 dB, turn L106 finely to lessen the difference of Separation between L and R.
(l) If the waveform is abnormal in L side with L+19 kHz, and the Separation is unbalance, adjust again for I.F. and check the MPX circuit.

AA–400(Audio Pre. Main Amplifiter)P.C.Board

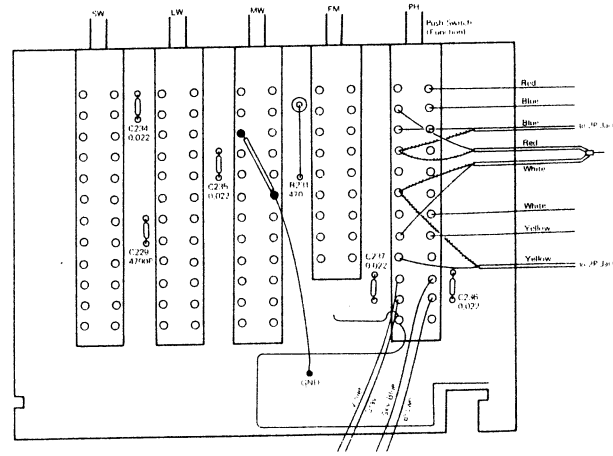




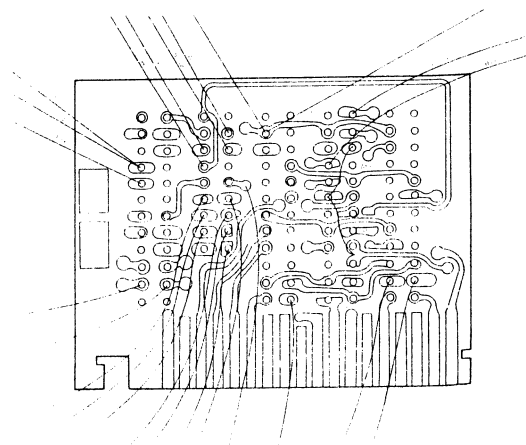
AMF–400(AM Frontend)P.C.Board



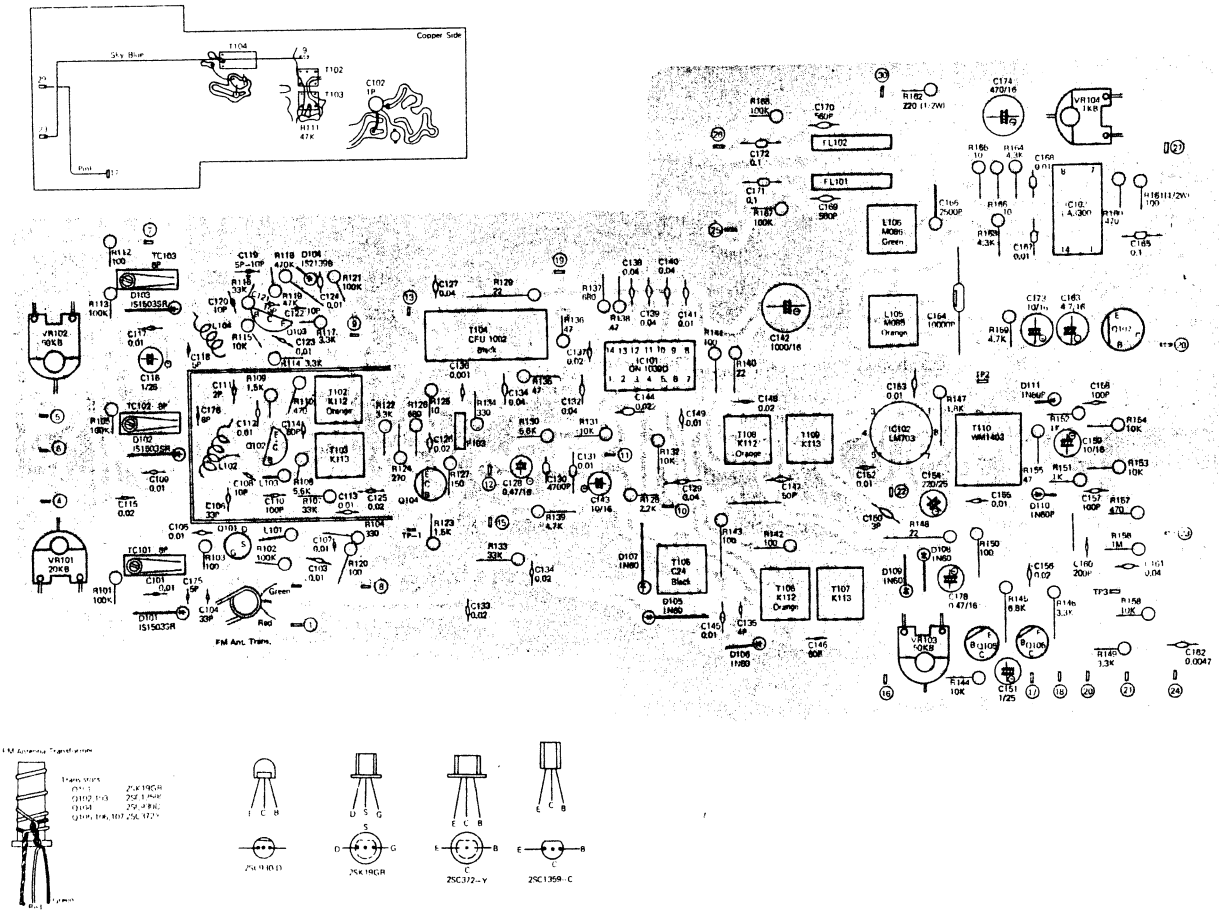
Switch P.C.Board (Conponent side)



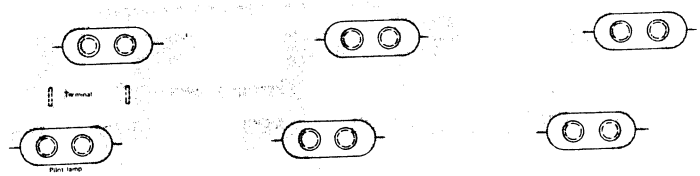
Switch P.C.Board (Copper side)



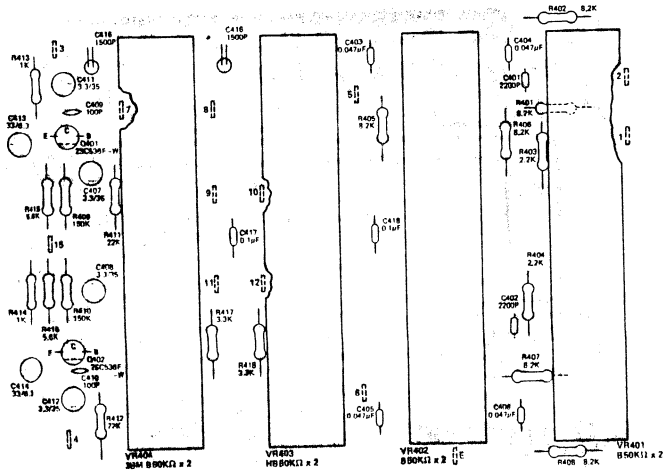
HF–400(FM Frontend FM AM IF Amplifier FM–MPX) P.C.Board



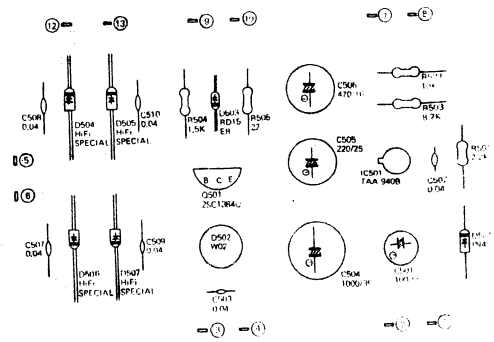
Pilot Lamp P.C.Board



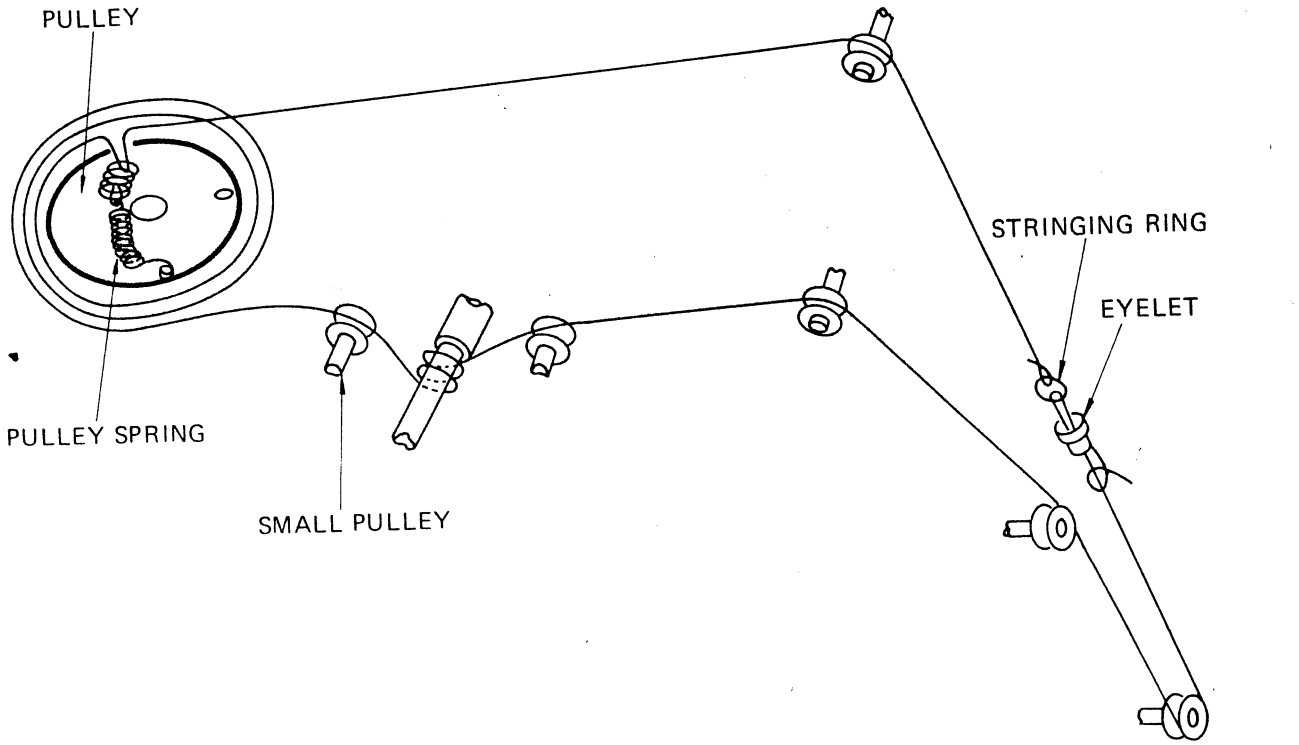
TOA–400(Tone control Volume Amplifier)P.C.Board



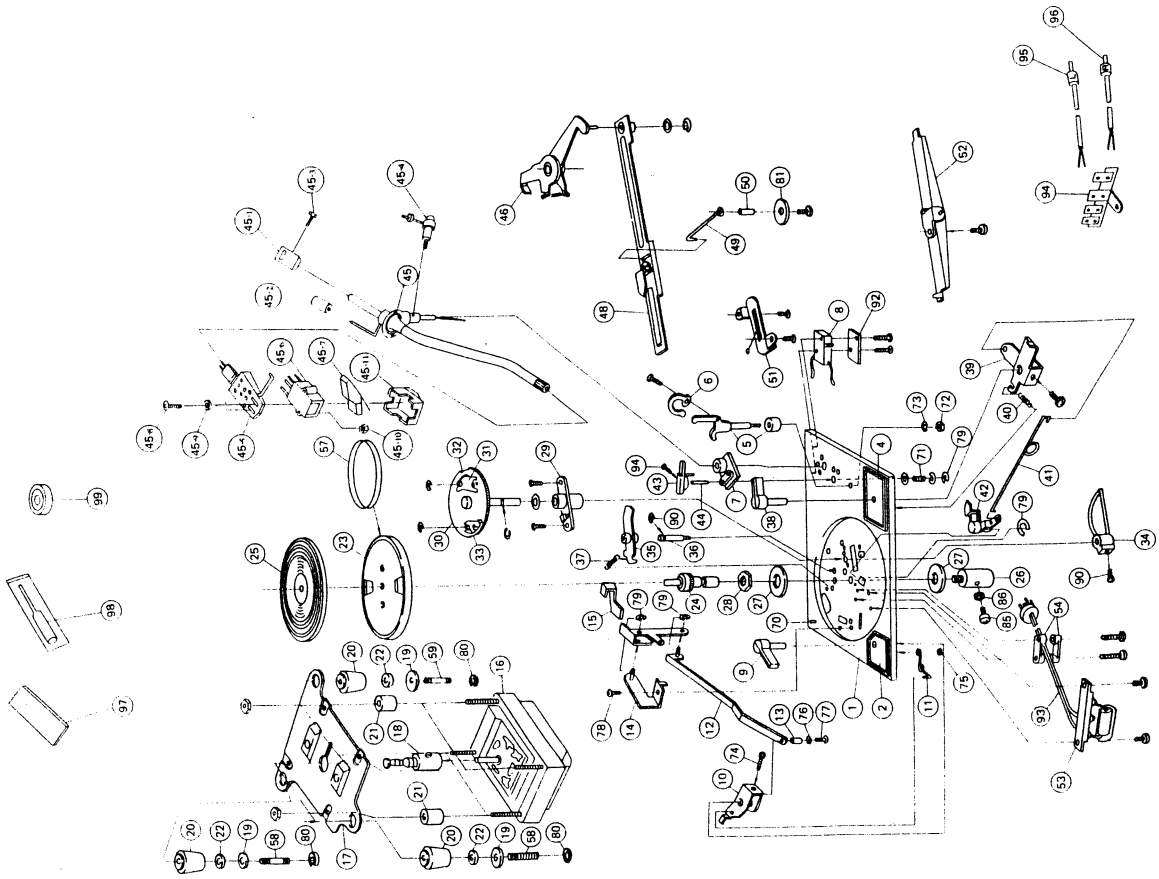
PS-400(Power Supply) P.C.Board



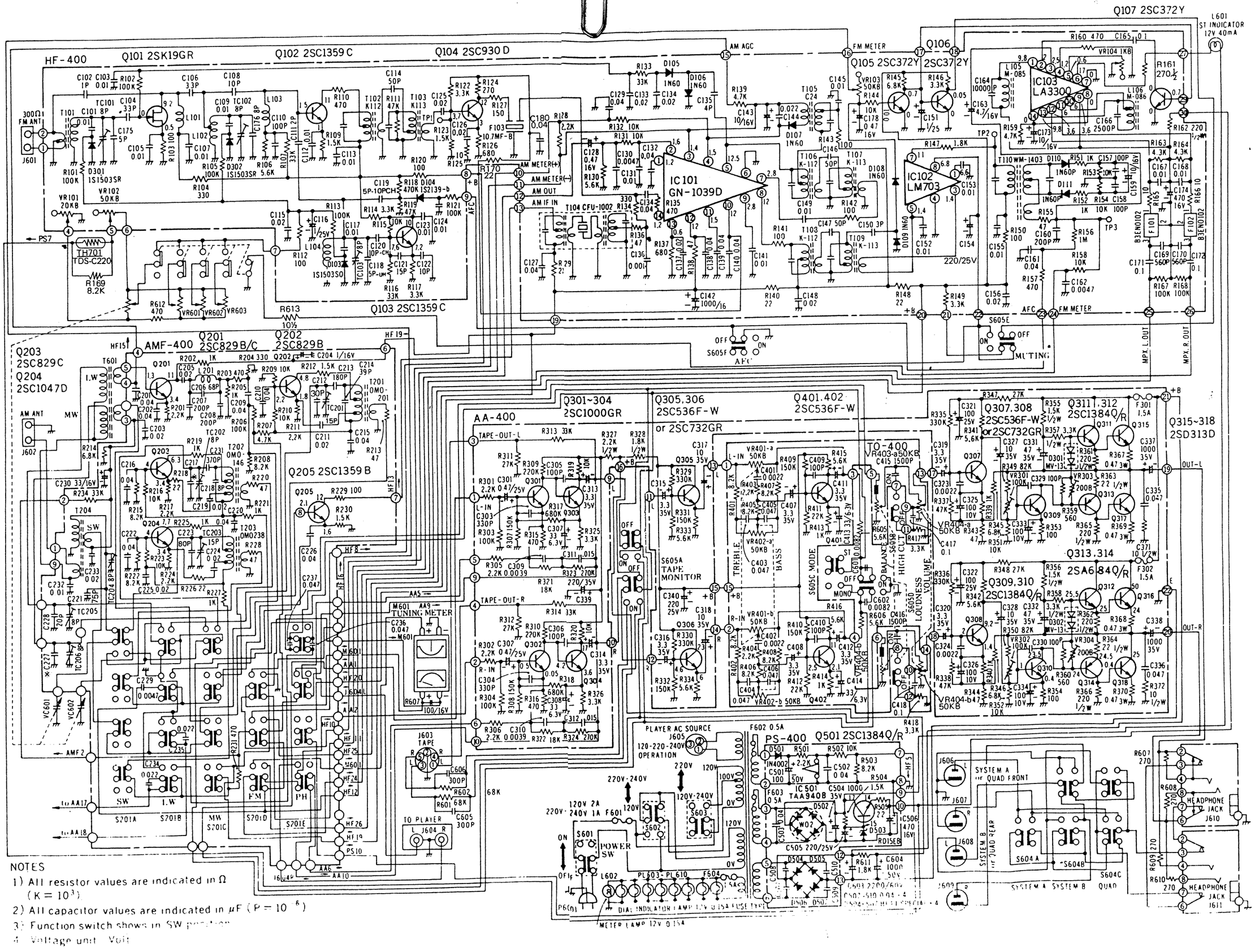
DIAL STRINGING



DISK PLAYER EXPLODED VIEW



CIRCUIT DIAGRAM



NOTES

1) All resistor values are indicated in Ω (K = 10^3).
2) All capacitor values are indicated in μF (P = 10^{-6}).
3) Function switch shows in SW position.
4) Voltage unit : Volt.